

## CLAIMS

1. A method for manufacturing a glass substrate for an information recording medium manufactured by polishing the surface of a raw material glass plate, the method being characterized in that:

the polishing is divided into two steps, a step for performing a first polishing process to roughly polish the surface of the raw material glass plate to be smooth and a step for performing a second polishing process to finely polish the surface of the roughly polished raw material glass plate to be smoother;

the first polishing process is a process, using a polishing pad made of a synthetic resin foam, that slides the polishing pad on the surface of the raw material glass plate while supplying a polishing agent to roughly polish the surface;

a pad dressing process is performed on the polishing pad in advance before being used in the first polishing process; and

the pad dressing process is a process for polishing the surface of the polishing pad by sliding the polishing pad on a pad dresser including abrasive grains.

2. The method for manufacturing a glass substrate for an information recording medium according to claim 1, characterized in that the pad dressing process is performed so that the product of load ( $\text{g/cm}^2$ ) applied to the polishing pad by the pad dresser and task time (min) required for the pad dressing process is 500 to 3000.

3. The method for manufacturing a glass substrate for an information recording medium according to claim 1 or 2,

characterized in that the pad dressing process is performed so that polishing rate, which is a value indicating polishing amount per unit time in the first polishing process, is maintained in a predetermined range.

5

4. The method for manufacturing a glass substrate for an information recording medium according to claim 3, characterized in that, when the polishing rate obtained immediately after the pad dressing process is performed is used as a reference value, the polishing rate is maintained between 80 and 100% of the reference value, and the pad dressing process is performed when the polishing rate is less than 80% of the reference value.

15 5. The method for manufacturing a glass substrate for an information recording medium according to any one of claims 1 to 4, characterized in that the mesh size of the pad dresser is #325 to #600.

20 6. The method for manufacturing a glass substrate for an information recording medium according to any one of claims 1 to 5, characterized in that the pad dresser is set such that when the pad dresser is arranged on the surface of the polishing pad, the weight applied to the surface of the polishing pad per 1 cm<sup>2</sup> is between 0.5 and 2.0 g.

25 7. The method for manufacturing a glass substrate for an information recording medium according to any one of claims 1 to 6, characterized in that the rough polishing of the raw material glass plate in the first polishing process is performed until the raw material glass plate has an arithmetic mean roughness (Ra), which is measured by an atomic force microscope, of 1.0 nm or less, an undulation

height ( $W_a$ ), which is measured by a multi-functional disc interferometer with a measuring wavelength ( $\lambda$ ) of 0.4 to 5.0 mm, of 1.0 nm or less, and a microscopic undulation height (NRa), which is measured by a three-dimensional surface structure analyzing microscope with a measuring wavelength ( $\lambda$ ) of 0.2 to 1.4 mm, is 0.3 nm or less.

8. The method for manufacturing a glass substrate for an information recording medium according to any one of claims 1 to 7, characterized in that the first polishing step is a process for roughly polishing the surface of the raw material glass plate in two stages, pre-polishing and post-polishing, wherein load applied to the raw material glass plate by the polishing pad in the first polishing process is greater during pre-polishing than during post-polishing.

9. The method for manufacturing a glass substrate for an information recording medium according to any one of claims 1 to 7, characterized in that after undergoing the pad dressing process, the surface of the polishing pad has an average undulation height, which is measured by a stylus measuring instrument with a measuring wavelength ( $\lambda$ ) of 0.25 to 1.4 mm, of 4 to 25  $\mu\text{m}$ , and a surface roughness, which is measured with a cut-off value ( $\lambda_C$ ) of 2.5 mm, of 3 to 8  $\mu\text{m}$ .

10. The method for manufacturing a glass substrate for an information recording medium according to any one of claims 3 to 5, characterized in that when performing the pad dressing process, the load is 20 to 100  $\text{g}/\text{cm}^2$ .

11. The method for manufacturing a glass substrate for an information recording medium according to any one of

claims 3 to 5, characterized in that task time for performing the pad dressing process is 10 to 60 minutes.

12. A glass substrate for an information recording medium manufactured by the manufacturing method according to any one of claims 1 to 7, characterized in that:

the glass substrate has an arithmetic mean roughness (Ra), which is measured by an atomic force microscope, of 0.4 nm or less, an undulation height (Wa), which is measured by a multi-functional disc interferometer with a measuring wavelength ( $\lambda$ ) of 0.4 to 5.0 nm, of 0.5 nm or less, and a microscopic undulation height (NRa), which is measured by a three-dimensional surface structure analyzing microscope with a measuring wavelength ( $\lambda$ ) of 0.2 to 1.4 nm, of 0.15 nm or less.

13. A polishing device for manufacturing a glass substrate for an information recording medium by polishing the surface of a raw material glass plate, the method for manufacturing a glass substrate for an information recording medium being characterized by:

a polishing pad formed from a synthetic resin foam, and a pad dresser including abrasive grains, wherein the polishing pad slides on the raw material glass plate when roughly polishing the surface of the raw material glass plate while supplying the surface of the raw material glass plate with a polishing agent, and the pad dresser slides on the surface of the polishing pad to polish the polishing pad.

14. The method for manufacturing a glass substrate for an information recording medium according to claim 13, wherein the pad dresser has a circular-plate shape, and the

diameter and thickness are substantially the same as the diameter and the thickness of the raw material glass plate.